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IN THE

Supreme Court of the United States

October Term, 1973
No. .....73 - 397

BRAND PLASTICS COMPANY, STANDARD OIL COMPANY (INDIANA), and AMOCO CHEMICALS CORPORATION,
Petitioners,

vs.

THE DOW CHEMICAL COMPANY,
Respondent.

Petition for Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit.

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vs.

THE DOW CHEMICAL COMPANY,

Respondent.

Petition for Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit.

Brand Plastics Company prays that a writ of certiorari issue to review the decision of the United States Court of Appeals for the Ninth Circuit originally entered in this case on February 20, 1973.

Opinions Below.

The opinion of the United States Court of Appeals for the Ninth Circuit (Appendix A, pp. a1-a2) is reported at 475 F.2d 124. The opinions, findings and conclusions, and supplemental findings and conclusions of the District Court (Appendix D, pp. a5-a55)[1] are reported at 168 U.S.P.Q. 133.

[1]Findings of Fact, pages a23-a46, are referred to as F.F.; Supplemental Findings of Fact, pages a48-a55, as S.F.F.

Jurisdiction.

The judgment of the Court of Appeals was entered February 20, 1973 (see Appendix B, p. a3). An order of the Court of Appeals (Appendix C, p. a4) denying a petition for rehearing was filed April 5, 1973. An order of Mr. Justice Douglas extending time to file a petition for writ of certiorari until September 2, 1973, was entered June 21, 1973. This Court's jurisdiction is invoked under 28 U.S.C. Section 1254 (1).

The Questions Presented.

1. Does an applicant for a patent owe a duty to cooperate with and assist the Patent Office by disclosing to it clearly relevant prior art known to the applicant so as to aid the Patent Office in correctly determining patentability?

2. To enforce such duty and to deter the assertion of patents obtained in violation thereof, may the district court in an infringement action in which the patent is held invalid in view of the withheld prior art properly hold that the action is an "exceptional case" under 35 U.S.C. §285 and award attorney fees to the prevailing party?

3. For like reasons, may a district court properly hold that a patent infringement action is an "exceptional case" and award attorney fees under 35 U.S.C. §285 where during the prosecution of the application for the patent in suit the applicant had deliberately, and with full knowledge of the true facts, misrepresented to the Patent Office both the nature of its process and the results achieved thereby in a successful effort to persuade the Patent Office to withdraw its rejection of the application and grant the patent in suit?

Statutory Provisions Involved.

The statute involved is 35 U.S.C. §285 which provides:

> "The court in exceptional cases may award reasonable attorney fees to the prevailing party."

Statement of the Case.

The parties involved are large manufacturers of impact polystyrene, a tough plastic material having many commercial applications, millions of pounds of which are produced annually. Respondent Dow Chemical Company (hereinafter referred to as "Dow") is the owner of Amos *et al.* patent No. 2,694,692, the claims of which are directed to a process for manufacturing impact polystyrene. This action was filed by petitioner Brand Plastics Company,[2] under 28 U.S.C. §§1338, 2201, 2202 for declaratory judgment that the patent was invalid and not infringed by them. Dow counterclaimed under 28 U.S.C. §1338(a) for patent infringement.

Following the close of respondent Dow's case in chief, the District Court for the Central District of California granted petitioner's motion for judgment under Rule 54(b) of the Federal Rules of Civil Procedure, holding that the patent in suit was both anticipated under Section 102 and obvious under Section 103 of Title 35, United States Code by certain prior art. The District Court further held that this was an

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[2]At the time, petitioner Brand Plastics Company was a wholly-owned subsidiary of petitioner Amoco Chemicals Corporation which in turn was a wholly-owned subsidiary of petitioner Standard Oil Company (Indiana). Amoco and Standard were subsequently joined as parties plaintiff and for all purposes the three petititioners have been treated as a single party plaintiff. See, *e.g.*, F.F. 5.

"exceptional case" under Section 285 of that title and awarded petitioners attorney fees. Judgment was entered on December 2, 1970.

The conclusion that the case was exceptional and the consequent award of attorney fees was based upon three separate breaches of Dow's duty to the Patent Office, each of which was supported by detailed findings of fact:

1. At the time of filing its application, Dow was well aware of certain prior art which the District Court held both anticipated the patent in suit and rendered the same invalid as obvious. Dow did not, however, disclose this prior art to the Patent Office during the prosecution of its patent application.

2. Faced with rejection of its application, Dow urged to the Patent Office that a new result was obtained by its process (prevention of crosslinking) which was not obtained by the prior art. At the time, however, Dow well knew that this alleged new result was not in fact obtained and that its representation to the Patent Office was false.

3. Faced with further rejection of its application, Dow urged to the Patent Office that its process involved an unconventional step not described in the prior art for which Dow coined the expression "shearing agitation". Dow amended its application claims to specify this "shearing agitation" and represented to the Patent Office that its amended claims distinguished over the prior art which taught simple stirring. At the time Dow well knew that its process involved no more than simple stirring and its resort to the term "shearing agitation" was done for the purpose of concealing this fact from the Patent Office.

The Court of Appeals affirmed the judgment as to invalidity of the patent on both grounds of anticipation and obviousness. But the Court of Appeals reversed as to attorney fees. Its decision was entered February 20, 1973, and the Court's opinion is set out in the Appendix hereto. A rehearing was timely sought but denied.

The precise grounds on which the reversal was based are unclear from the Court of Appeals' opinion. The court affirmed the holding of invalidity for both anticipation and obviousness, thereby recognizing that the withheld prior art relied upon by the lower court invalidated Dow's patent. Yet, the Court stated, without explanation:

> "Nothing of significance was concealed from the Patent Office." (Appendix A, p. a2).

Further, the court made no reference to and did not question the correctness of the findings of fact of the trial court concerning Dow's deliberate misrepresentations to the Patent Office as to the results obtained by its process or the nature of its process nor did it question in any way the sufficiency of the proofs on these matters. The Court of Appeals simply stated:

> ". . . the conduct of it (Dow) and its attorneys was essentially fair." (Appendix A, p. a2).

In effect, the court held, contrary to the holdings of courts of appeals for other circuits,[3] either that such duties to the Patent Office do not exist or that a

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[3]See, *L. F. Stassheim Company v. Gold Medal Folding Furniture Co.* (7 Cir. 1973) 477 F.2d 818 and *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.* (S.D. Fla. 1972) 175 U.S.P.Q. 260, affirmed *per curiam* on the opinion below (No. 72-3027, 5 Cir. March 30, 1973), discussed *infra.*

breach thereof does not permit the award of attorney fees.

The Court of Appeals' only reference to the findings was that they were not of the requisite precision to support attorney fees and that had such findings been made, they would have lacked evidentiary foundation. The court stated simply that from the record it was convinced that *no palpable fraud* had been committed.

From the above, it can only be concluded that the Court of Appeals sanctioned Dow's conduct before the Patent Office, squarely holding that a District Court cannot properly award attorney fees to a party who succeeds in invalidating a patent where it is established that the patent owner deliberately concealed from the Patent Office the same prior art held by the court to invalidate the patent and also induced the Patent Office to grant its patent by deliberate factual misrepresentations as to the nature of and the results achieved by the process for which the patent was sought.

In order to demonstrate that the above noted Questions Presented are properly raised on this Petition, a brief summary of the pertinent evidence adduced at the trial follows.

For many years prior to the patent in suit a number of manufacturers, including Dow, had been commercially manufacturing crystal polystyrene in very large quantities, *i.e.*, millions of pounds per year. One commercial crystal polystyrene process extensively used by Dow was a batch or discontinuous process known as the "all can" process [F.F. 15]. To improve upon this, Dow sought to develop a continuous process whereby styrene could be polymerized to polystyrene on a continuously flowing basis to provide greater efficiency and

other advantages [F.F. 20, 21]. By 1946, Dow had developed the Stober-Amos apparatus which accomplished this purpose and for which Dow received the Stober-Amos patent No. 2,530,409. Between December 1946 and December 1947 this Stober-Amos equipment was used commercially by Dow to produce polystyrene which was sold by it in the normal course of business [F.F. 58]. In addition to its own prior commercial Stober-Amos process, by 1945 Dow was also aware of the German Badische process for making polystyrene described, for example, in the publication *German Plastics Practice* dated 1946. Dow was also aware of the Allen patent No. 2,496,653.[4]

Crystal polystyrene, however, is quite brittle and can not be used where high resistance to impact is required [F.F. 14]. The solution to this problem is "impact polystyrene". Dow manufactured impact polystyrene in the mid 1940's. The process which it employed was the

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[4]In the manufacture of polystyrene, the starting or raw material used is liquid styrene monomer. Heating this material under controlled conditions causes the styrene monomer molecules to combine in long chains to form the polystyrene. This phenomenon is known in the art as polymerization.

In the "all can" process, metal cans were filled with styrene and placed in a water bath and the styrene polymerized through a predetermined temperature cycle over several days, being finally heated in an oven to complete polymerization [F.F. 16].

The Stober-Amos apparatus consisted of a stirred prepolymerizer or kettle in which initial polymerization of the styrene monomer occurred followed by a second or finishing polymerizer in the form of an enclosed screw extruder [F.F. 22-29].

In the German Badische process, styrene was first prepolymerized in a stirred kettle and then finished in a heated vertical tower [F.F. 70].

The Allen patent described a process for manufacturing polystyrene employing a stirred kettle in which styrene was prepolymerized followed by quiescent finishing in cans, which process had also been used by Dow as early as 1939 [F.F. 66].

same as that used for crystal polystyrene, *i.e.*, the all can process, except that a small amount of rubber was added to the styrene monomer feed as previously taught by Ostromislensky [F.F. 35].[5]

On November 11, 1946, shortly after Dow had successfully made crystal polystyrene in the above described Stober-Amos equipment, it was proposed that the equipment be used to make impact polystyrene by the addition of a small amount of rubber to the feed [F.F. 49]. This proposal was subsequently carried out [F.F. 53-55] and constitutes the alleged invention of the patent in suit. As found by the trial court:

> ". . . the 'process' concerned in its (Dow's) application consisted simply of adding a little rubber to the mixture being subjected to the polymerization in the so-called Stober-Amos equipment. . . ." [S.F.F., p. a49].

Indeed, the patent in suit describes the stirred kettle or prepolymerizer and the screw extruder of Stober-Amos [F.F. 78, 79] for practicing the claimed process. Subsequently, in early 1949, Dow modified its process to stir only the prepolymerizer, finishing polymerization quiescently [F.F. 65]. This method, however, had been used by Dow as early as 1939 and was described in both the prior Allen patent [F.F. 66] and in *German Plastics* [F.F. 70].

Summarizing, the patentees did nothing more than add a little rubber to the feed used in known prior

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[5]As early as 1927 the well-known chemist Ostromislensky taught that high impact strength could be obtained by adding a small amount of rubber to the styrene monomer feed before polymerization. This concept was patented in the now expired U.S. Patent No. 1,613,673 and the product has come to be known as "impact polystyrene" [F.F. 36, 37].

art polystyrene processes employing stirred prepolymerizers (Stober-Amos, *German Plastics* and Allen) to increase the impact strength of the final product. But this addition for this identical purpose was also known (Ostromislensky). The question naturally arises: How then did Dow obtain its patent? The answer, is clearly established in the record and is set forth in detail in the findings of the District Court. Dow concealed this prior art from the Patent Office. Further, Dow deliberately misrepresented to the Patent Office the facts concerning both the nature of its process and the results achieved. It is to these matters that we now turn.

When Dow determined to seek a patent it had little conviction that its process was patentable over the prior art known to it [F.F. 71, 72]. Dow, however, prevented this issue from arising in the Patent Office. Thus, in presenting its application, Dow never apprised the Patent Office that the process which it sought to monopolize consisted of nothing more than adding a small amount of rubber to the feed of the prior art process of Stober-Amos, Allen or *German Plastics*. To the contrary, it simply did not call this art to the attention of the Patent Office, directing its efforts to distinguishing over other prior art found and cited by the Patent Office which was markedly less pertinent [F.F. 92].

This matter is succinctly set forth in the findings of the trial court. For example:

> "This case is 'exceptional', within the meaning of 35 U.S.C. §285, not because hindsight reveals that there was prior art that Dow inadvertently or with understandable negligence failed to call to the attention of the Patent Office. Dow's patent personnel were well aware that the 'process' concerned in its application consisted simply of add-

> ing a little rubber to the mixture being subjected to polymerization in the so-called Stober-Amos equipment that was also the subject of one of Dow's currently pending applications. The inherent relevance of the Stober-Amos disclosure cannot reasonably be questioned, and Dow's failure even to mention it constitutes a gross lack of candor. If such disclosure had been made, I am convinced that no reasonable patent official would have approved the subject patent application. This conclusion becomes even more compelling in light of other prior art, such as the Allen Patent No. 2,496,653 and the Modern Plastics article, of which Dow was also aware and failed to disclose." [S.F.F., p. a49, a50].

As previously noted, the trial court found the patent in suit to be invalid as both anticipated by and obvious in view of this withheld art [See, for example, F.F. 83, 84 and 95].

In its pursuit of a patent, Dow did not content itself with merely concealing the above noted prior art from the Patent Office. Faced with an early rejection of its application, it proceeded to deliberately and falsely misrepresent to the Patent Office the results obtained by its process. Thus, Dow stated that its process substantially reduced or entirely eliminated crosslinking (a particular chemical attachment) between the styrene and rubber molecules. This representation was false and was known by Dow to be false at the time it was made [F.F. 74(d), 86, 87]. The materiality of this misrepresentation is clear [F.F. 88]. Indeed, the trial court found that had the true facts in this regard been made known to the Patent Office: "It is . . . obvious that no patent would have resulted." [S.F.F., p. a52].

Finally, Dow resorted to still another deception. Dow urged to the Patent Office that unlike the processes of the prior art which employed conventional stirring during polymerization, the Dow process included the step of "shearing agitation" and that such "agitation . . . is not conventional" [F.F. 85]. Again, this representation was false and indeed was known by Dow to be false at the time it was made [F.F. 87].

As to this, the trial court found:

> "Instead of apprising the Patent Office of the true scope of the prior art and the true nature of the process sought to be patented, Dow asserted that the process sought to be patented included the step of 'shearing agitation' and that such 'agitation . . . is not conventional', whereas the evidence established that there is no difference between 'shearing agitation' and conventional stirring, beating or agitating." [F.F. 85].

Expanding on this the trial court made the further finding that:

> "There was no need or occasion to invent the term 'shearing agitation' except for the purpose of concealing the fact that what was meant was no more than stirring or the subjecting of the mixture to the Stober-Amos equipment.
>
> The record in this case impels the conclusion that both before the Patent Office and at this trial, Dow carefully sought to convey the impression that the *process* of 'shearing agitation' connoted something much more and much different than simple stirring. I agree with Brand that such attempt was unjustified, was intentionally misleading, and constitutes a further reason why this case is 'exceptional'." [S.F.F., p. a51].

Reasons for Granting the Writ.

Petitioners submit that this writ should be granted on two independent grounds:

1. To promote the public interest in full and free competition.
2. To resolve conflict and confusion in the lower federal courts.

The Public Interest.

This Court has many times recognized the important policy of full and free competition in the use of ideas which are in reality a part of the public domain. An affirmative holding by this Court on the questions presented on this Petition will tend strongly to reduce the number of unadjudicated invalid patents which subvert such policy, for the following reasons:

(a) Requiring disclosure to the Patent Office of clearly relevant prior art known to the applicant will greatly aid the Patent Office in correctly determining the patentability of applications and in avoiding the allowance of patents which should not have been issued.

(b) The likelihood that the patent owner will be required to pay not only his own attorney fees but also those of his opponent will have a deterrent effect upon the assertion of patents which have not been fairly prosecuted in the Patent Office.

(c) Those threatened by an improperly obtained patent will be encouraged to resist rather than to pay tribute to avoid the frequently devastating financial burden of defending an infringement suit.

This Court has frequently recognized the far-reaching social and economic consequences of a patent.

Precision Instrument Mfg. Co. v. Automotive Maintenance Machinery Co. (1945) 324 U.S. 806, 89 L.Ed. 1381; *Blonder-Tongue Labs. v. University of Illinois Foundation* (1971) 402 U.S. 313, 28 L.Ed. 2d 788. It has also stressed "the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain", *Lear v. Adkins* (1969) 395 U.S. 653, 670, 23 L.Ed. 2d 610, 623.

We submit that every reasonable effort, within our existing statutory framework, should be used to prevent the issuance of invalid patents. The prosecution of applications in the Patent Office is an *ex parte* proceeding. While the patent examiners attempt to search the available prior art, necessarily their time and resources are limited and the burden upon them is heavy. *Graham v. John Deere Co.* (1966) 388 U.S. 1, 18, 15 L.Ed. 2d 545, 557. Relevant prior art will be overlooked or knowledge of prior uses and sales (such as Stober-Amos here) will simply be unavailable to the examiner. It is inevitable, therefore, that patents will be issued which should not have been.

Manifestly, it is the applicant himself who will often be the best advised as to the prior art in the particular field involved. We submit that an applicant should disclose to the Patent Office clearly relevant prior art of which he has knowledge and which will greatly aid the Patent Office in properly performing its function of avoiding the allowance of invalid patents.

We further submit that where, as here, an applicant has concealed from the Patent Office the very prior art held by both courts below to anticipate the patent and also render the same invalid as obvious, the Dis-

trict Court, at the very least, should be able to declare the case an exceptional one under 35 U.S.C. §285 and award reasonable attorney fees to the prevailing party.

As to the second aspect of this case, that of Dow's deliberately misleading the Patent Office by falsely representing to the Patent Office both the nature of its process and the results achieved thereby, in order to obtain its patent, there can be no question but that Dow (through its attorneys) violated its obligation to the Patent Office of the "highest degree of candor and good faith" as prescribed by this Court in *Kingsland v. Dorsey* (1949) 338 U.S. 318, 319, 94 L.Ed. 123, 126. Again, we submit that under such circumstances the District Court should be held empowered to award attorney fees under 35 U.S.C. §285.

This Court has recently addressed itself to the problem of the harassment of alleged infringers and the opportunities of holders of invalid patents to exact licensing agreements or other settlements from them. Thus, in *Blonder-Tongue Labs. v. University of Illinois Foundation* (1971) 402 U.S. 313, 28 L.Ed. 2d 788 the Court overruled *Triplett v. Lowell* (1936) 297 U.S. 638, 80 L.Ed. 949, holding that, with certain limited exceptions, a patent once adjudicated to be invalid could not be further asserted. In keeping with this policy we submit that an affirmative answer to the Questions Presented on this petition should be rendered. Thus, there can be no question but that the owner of a tainted patent, *i.e.*, one granted by the Patent Office under the cloud of concealed prior art or material factual misrepresentations, will be strongly deterred in his efforts to exact tribute under his patent if faced with the likelihood that he must bear not only

his own but also his opponent's legal expenses in any litigation which ensues.

Finally, this Court has also recently made clear its views regarding the wholesome effect of encouraging the authoritative testing of patent validity. See *Kerotest Mfg. Co. v. C-O-Two Fire Equip. Co.* (1952) 342 U.S. 180, 185, 96 L.Ed. 200, 204, wherein it was held that a threatened manufacturer may challenge the validity of a patent under the declaratory judgment act. See also *Lear v. Adkins* (1969) 395 U.S. 653, 23 L.Ed. 2d 610, holding that a licensee was not estopped to challenge the validity of a patent in an action for royalties. As noted by this Court in *Blonder-Tongue, supra,* 402 U.S. at 342, 28 L.Ed. 2d at 807, the frequently huge costs of patent litigation will act as a strong deterrent to a businessman confronted with a charge of patent infringement. We submit it to be self-evident that when threatened with a tainted patent, the businessman will be greatly encouraged to resist rather than pay tribute or discontinue his activities if he has reasonable assurance that the burden of his attorney fees will fall upon his adversary.

The Conflict and Confusion in the Lower Courts.

The matter of an applicant's (or his attorney's) "duty to the Patent Office" has been frequently litigated and the result has been one of considerable confusion in the courts. In this Court we find the duty expressed in such language as:

> "uncompromising duty to report . . . (to the Patent Office) all facts concerning possible fraud or inequitableness. . . ."

Precision Instrument Mfg. Co. v. Automotive Maintenance Machinery Co. (1945) 324 U.S. 806, 818, 89

L.Ed. 1381, 1388; or as the "highest degree of candor and good faith". *Kingsland v. Dorsey* (1949) 338 U.S. 318, 319, 94 L.Ed. 123, 126. This Court has also referred to "knowingly and willfully misrepresenting facts to the Patent Office". *Walker Process Equipment, Inc. v. Food Machinery and Chemical Corporation* (1965) 382 U.S. 172, 177, 15 L.Ed. 2d 247, 251.

In the lower courts we find such expressions as "candor and disclosure . . . commensurate with 'equitable standards of conduct' ". *Monsanto Co. v. Rohm & Haas Co.* (3 Cir. 1972) 456 F.2d 592, 599; " 'uncompromising duty' of good faith disclosure", *Beckman Instruments, Inc. v. Chemtronics Inc.* (5 Cir. 1970) 428 F.2d 555, 566; "an obligation of frank and truthful disclosure", *Charles Pfizer and Co. v. FTC* (6 Cir. 1968) 401 F.2d 574, 579. In addition, the expression "fraud on the Patent Office" is frequently used and in many cases the question of fraud is raised. Compare, for example, *Shelco, Inc. v. Dow Chemical Co.* (7 Cir. 1972) 466 F.2d 613 and *Indiana General Corp. v. Krystinel Corp.* (2 Cir. 1970) 421 F.2d 1023 with *L. F. Strassheim Co. v. Gold Medal Folding Furniture Co.* (7 Cir. 1973) 477 F.2d 818, 824 and *Monolith Portland Midwest Co. v. Kaiser Aluminum and Chemical Corp.* (9 Cir. 1969) 407 F.2d 288, 294.

Much of this confusion stems from the fact that the question of an applicant's conduct before the Patent Office arises under many different contexts. For example, the unenforceability of a patent for un-

clean hands, *Precision Instrument, supra;* attorney disbarment proceedings, *Kingsland v. Dorsey, supra;* patent invalidation proceedings, *United States v. American Bell Telephone Co.* (1888) 128 U.S. 315, 32 L.Ed. 450; patent validity, *Monsanto Co. v. Rohm & Haas Co., supra;* unfair competition under the Federal Trade Commission Act, *Charles Pfizer and Co., supra;* protection offered by a patent under the Antitrust Laws, *Walker Process, supra;* and finally, the matter of attorneys fees presented here.

Focusing solely on the attorney fees cases, there is sharp conflict in the lower courts. Considering first the matter of withholding prior art from the Patent Office, the instant case is in direct conflict with a recent decision of the Court of Appeals for the Seventh Circuit, *L. F. Strassheim Company v. Gold Medal Folding Furniture Co.* (7 Cir. 1973) 477 F.2d 818. There the Court held the case to be "exceptional" under 35 U.S.C. §285 where a prior sale had not been disclosed—just as in the instant case wherein Stober-Amos and its prior commercial use had been withheld. In *Strassheim,* the Court of Appeals awarded attorney fees even though "deliberate fraud" had not been shown (477 F.2d at 823, 824); whereas here, the Court of Appeals denied attorney fees because there was no "palpable fraud" shown (Appendix, a, p. a2). See also *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.* (S.D. Fla. 1972) 175 U.S.P.Q. 260, affirmed *per curiam* adopting the opinion below (5 Cir., No. 72-3027, March 30, 1973) .... F.2d ...., pet. for cert. pend-

ing on other grounds, No. 73-131, wherein attorney fees were awarded on the basis of concealed prior art.

In cases involving both a withholding of relevant art and misrepresentations to the Patent Office, those courts awarding fees do so on the ground either that such conduct establishes fraud (see, for example, *Shelco, Inc. v. Dow Chemical Co.* (7 Cir. 1972) 466 F.2d 613) or that proof of fraud is not necessary. See *Monolith Portland Midwest Co. v. Kaiser Aluminum and Chemical Corp.* (9 Cir. 1969) 407 F.2d 288; *Aerodyne Machinery Corp. v. Slick Industrial Co.* (D.Minn. 1971) 169 U.S.P.Q. 150.

Cases denying attorneys fees because fraud had not been established are *Indiana General Corp. v. Krystinel Corp.* (2 Cir. 1970) 421 F.2d 1023; The *Q-Panel Co. v. Newfield* (10 Cir. July 2, 1973 slip opinion) .... F.2d ....; *Triumph Hosiery Mills, Inc. v. Alamance Industries, Inc.* (4 Cir. 1962) 299 F.2d 793; *Duff-Norton Co. v. Ratcliff* (9 Cir. 1966) 362 F.2d 551. This Court should resolve this confusion and conflict by making clear that conduct such as Dow's will not be condoned whether the same be labelled as simply inequitable, lacking candor or amounting to palpable fraud.

Conclusion.

We submit that this Petition presents issues of vital public concern. There is no question but that an applicant, in his *ex parte* dealings with the Patent Office, must conform to certain standards of conduct. We believe that such standards require a disclosure of clearly relevant prior art known to the applicant and require that the applicant be truthful in his dealings with the Patent Office. We urge that the district courts may properly impose the sanction provided in 35 U.S.C. §285 in cases where such standards have been violated. Not only will the Patent Office be aided in effectively performing its functions, but the deadening effect of improvidently issued patents will be materially reduced. To these ends we respectfully request that this Petition be granted.

August 30, 1973.

Respectfully submitted,

RICHARD E. LYON,
Attorney for Petitioners.

Of Counsel:

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RALPH C. MEDHURST.

APPENDIX A.

Opinion of the United States Court of Appeal, Ninth Circuit.

United States Court of Appeals, Ninth Circuit.

The Dow Chemical Company, Appellant, v. Dart Industries, Inc., Appellee, No. 71-1371.

Brand Plastics Company, et al., Appellees, v. The Dow Chemical Company, Appellant, No. 71-1372.

Feb. 20, 1973.

Before ELY, TRASK, and WALLACE, Circuit Judges.

PER CURIAM:

The patent involved in this suit is Number 2,694,692. The District Court held that the patent was invalid, anticipated by certain prior arts and embracing a procedure that would have been obvious to one skilled in the prior art. The appellant vigorously challenges this conclusion, but we are not persuaded that we should disturb it. The trial was extensive, consuming some twenty days, with highly expert, opposing opinions expressed by different witnesses presented by the competing parties. This being true, we cannot hold that the District Court's finding of fact in this respect was clearly erroneous.

We take a different view on another argument advanced by the appellee, an argument aimed at the District Court's finding that this was an "exceptional" case under 35 U.S.C. § 285 and leading to the District Court's conclusion that approximately one million dollars should be awarded as attorneys fees to the appellees and paid by the appellant. To substantiate such

fees, there must be precise findings that clearly show the necessary prerequisites. *See* Florida Brace Corporation v. Bartels, 332 F.2d 337 (9th Cir. 1964). Here, there were no findings of the requisite precision, and we are persuaded that even had such findings been made, they would have lacked sufficient evidentiary foundation.

We have carefully examined the record, particularly that concerned with the appellant's negotiations with the patent office and its procurement of the patent in suit. We are left with the definite conviction that there was no palpable fraud committed by the appellant in respect to these negotiations and that, on the whole, the conduct of it and its attorneys was essentially fair. Nothing of significance was concealed from the patent office. This is not that type of an exceptional case in which one procuring and seeking to protect its patent should be compelled to absorb the expense of attorneys' fees incurred by its adversaries, and the District Court's conclusion to the contrary is reversed. *Cf.* Locklin v. Day-Glo Color Corp., 468 F.2d 1359 (9th Cir. 1972). Upon remand, the judgment of the District Court will be modified accordingly.

Affirmed in part; reversed in part, with directions.

WALLACE, Circuit Judge (concurring:)

I concur in the opinion except I am not persuaded that given findings which meet the test of *Florida Brace Corporation,* the evidence would not be sufficient to sustain the award of attorneys' fees under Shingle Product Patents v. Gleason, 211 F.2d 437, 441 (9th Cir. 1954).

APPENDIX B.

Notice of Entry of Judgment and Filing of Opinion.

Office of the Clerk
United States Court of Appeals
for the Ninth Circuit

U. S. Court of Appeals and Post Office Building
7th & Mission Streets, P. O. Box 547
San Francisco, California 94101

Re: No. 71-1371 THE DOW CHEMICAL COMPANY VS. DART INDUSTRIES, INC.
71-1372 BRAND PLASTICS COMPANY ET AL. VS. THE DOW CHEMICAL COMPANY.

Dear Sir:

An opinion in the above case was filed today, and pursuant to Rule 36 of the Federal Rules of Appellate Procedure a judgment was entered 2-20-73. Affirmed in part, reversed in part etc. Judge Wallace concurring. the judgment or order of the court below (or administrative agency).

Pursuant to Rule 41(a) the mandate of this court will issue 21 days after the entry of a judgment, unless the court enters an order otherwise, or grants a stay of the mandate or a petition for rehearing is filed. If a petition for rehearing is filed and denied, the mandate shall issue 7 days after the entry of the order denying the petition.

Very truly yours,

/s/ Dennis R. Mathews
Dennis R. Mathews,
Clerk of Court

APPENDIX C.

Order.

United States Court of Appeals, for the Ninth Circuit.

Brand Plastics Company, et al., Appellees, v. The Dow Chemical Company, Appellant. No. 71-1372.

Filed: April 5, 1973.

Before: ELY, TRASK, and WALLACE, Circuit Judges.

The Petition for Rehearing is denied.

Walter Ely
Ozell M. Trask
/s/ J. Clifford Wallace
United States Circuit Judges

APPENDIX D.

Reported Opinions, Findings and Conclusions and Supplemental Findings and Conclusions of the United States District Court, Central District of California.

District Court, C. D. California.

Brand Plastics Company et al. v. The Dow Chemical Company; The Dow Chemical Company v. Dart Industries, Inc. Nos. 65-1725-WPG, 66-412-WPG.

Decided Apr. 2, July 30, Sept. 1, and Dec. 2, 1970.

Grey, District Judge (orally).

Well, gentlemen, this is the time to consider one significant step in this long pending and earnestly litigated issue. I am mindful of how important this case is and how much it means to all of the parties. I know that there is a great deal involved here, and if that wasn't otherwise apparent, it would be apparent by the care and thoroughness and devotion with which all counsel here have prepared over the many years and litigated this case.

I want first to express appreciation and compliments to you, Mr. Blair, and your colleagues, Mr. Waldrop; and Mr. Hoppe and Mr. Mitchell, and Mr. Lyon and Mr. Smoot and Mr. Geriak, and your respective colleagues. I certainly learned a great deal about polystyrene and chemistry and God knows what else over the course of this, and you have furthered my education a great deal. I must have been quite a challenge certainly at the outset.

I have developed, as you might expect, many impressions over the course of this trial. I have paid absolutely as good attention as I could, and I have understood everything that I could possibly understand, and I think I will make the self-serving statement, al-

though I am still quite deficient in a number of the technical aspects of this case, I think I generally understand what the parties and their witnesses have been trying to convey.

I have many impressions. They are not all consistent. Of course, many of the impressions are contradictory. Certainly I cannot articulate here and now everything that I have learned that impresses me one way or the other.

But I have undertaken to, and I will, decide this matter the very best that I can on the evidence that has been presented. As I say, I will not mention all of the evidence here today. It took 32 or so volumes to get it in, and I can't cover it all this afternoon.

The first thing that I will take up is Mr. Hoppe's motion for judgment for the defendant or dismissal on the ground of lack of novelty under Section 101.

Mr. Hoppe cites principally for that the Stober-Amos invention. The purpose of the Stober-Amos process, because it is a process patent, is to teach the polymerization of styrene in a stirred reactor. The purpose of the stirring is to prevent channeling. That was set forth by Dr. Amos at page 1420 of the transcript.

Another purpose was to, according to the Stober-Amos patent itself, effect temperature equalization. That's in Column 3 at the beginning about line 27. And also Dr. Boundy talked about that as being a purpose in his testimony at page 210.

And another purpose is to accomplish uniformity of a chemical composition.

Dr. Boundy also said that at page 210 of the transcript.

So those are three purposes of stirring in the Stober-Amos process.

The patent in suit does the very same thing, it stirs for the very purposes of channeling, temperature control and uniformity of composition. Therefore, it does exactly the same thing as in the Stober-Amos patent, except that here a little rubber is added, up to 5 percent.

But, as I say, the purpose of stirring is the same. And granted the difference in the adding of the rubber, the whole thing is treated in the same way as it is in the Stober-Amos patent.

Now, I have said that rubber is added. The idea of copolymerizing styrene and rubber is not new. That was taught by Ostromislensky, if I have the name right.

So the question with respect to novelty is the same one that we talked about a month or so ago, namely, are we using significantly different materials in the Stober-Amos patent as compared with the patent in suit? Or are the materials comparable? For example, the cadaver compared with the fish.

I have concluded that the materials of crystal polystyrene as disclosed in the Stober-Amos patent, the use of them is not so significantly different from the use of a rubber-styrene solution as to constitute them a different process.

The patent in suit talks of agitation from between 10 and 40 percent polymerization. And with respect to the use of cross-linking materials, the critical period is beyond that. The time when there is a danger of setting up the equipment is beyond the 40 percent polymerization. And it was known to be so. I will discuss that a little bit later.

So for purposes of the process it seems to me that whether we talk about the Stober-Amos process or the patent in suit we are doing the same thing to comparable materials. And under these circumstances it does seem to me that the Groen case [159 USPQ 332] that we talked about before has a pertinence.

And Mr. Hoppe cites that quotation at page 710 of 402 F.2d, 159 USPQ at 334, a Ninth Circuit case, where the opinion said:

> "The answer is that this was simply the application by the patentee of an old process to a new subject without any exercise of the inventive faculty and without the development of any idea which can be deemed new or original in the sense of the patent law."

I have been obliged to conclude that that comment applies here.

As Mr. Hoppe also cites, the Elrick Rim case is pertinent where, at page 486 of 264 F.2d, 120 USPQ 514, 519, the court says:

> "A different use of a known substance, machine or process is not new within the meaning of this statute if it is merely analogous or cognate to the uses theretofore made."

And I have to conclude that stirring styrene-rubber in a polymerization process, early parts of it, and prepoly-

merization is cognate to this previously taught stirring in prepolymerization of crystal polystyrene.

And I think this is not like the Carnegie case [185 U.S. 403] because the Carnegie case there involved what the court considered to be a different process, and I just cannot conclude that the patent in suit is concerned with a different process than that pertaining to the Stober-Amos patent.

Now, it is true that when you use the Stober-Amos process for rubber and styrene, you get an additional result, and it is also true that the holders of the Stober-Amos patent presumably didn't realize this or they weren't concerned about it, they weren't talking about it, they didn't have a realization that if you used their process in the making of impact polystyrene you would have the additional result of the breaking of the cross-linking.

But it seems to me that the General Electric case against Jewel Incandescent Lamp Company in 326 U.S., beginning at page 242, 67 USPQ 155 here becomes pertinent. Justice Douglas said for the court at page 247, 67 USPQ at 157:

> "If A, without mentioning the element of strength, patented a bulb which was extra strong, B could not obtain a patent on the bulb because of its strength, though he was the first to recognize that feature of it."

Well, it seems to me that if you were to paraphrase that as being pertinent here, what Justice Douglas is saying is that if Stober-Amos, without mentioning cross-linking, patented a prepolymerization process or the polymerization process that, in addition to dispersion and temperature control, would break cross-linking,

Dow in the patent in suit could not later patent the polymerization process because of its breaking of cross-linking even though it was the first to recognize that feature of it. And so it seems to me that the fact that a new result was discovered to be involved in such a stirring and prepolymerization process, a new and desirable result, comparable to the adding of strength to the incandescent lamps, does not add patentability to a process that was previously established.

Mr. Hoppe also cites the Potts v. Creager case [155 U.S. 597] where it says, along that same line:

> "Doubtless the patentee is entitled to every use of which his invention is susceptible whether such use be known or unknown to him."

And that, as I say, seems to fit here.

> "But the person who has taken his device and by improvements thereon has adapted it to a different industry may also draw to himself the quality of the inventor."

And we have to consider whether the adaptation here is to anything comparable to a different industry and, as I have already indicated, it just doesn't seem to me that it is. It is simply applying the same process to the same materials, except the adding of some rubber—adding of a little rubber.

So it seems to me also that if a person were to follow the Stober-Amos process and use, however, rubber in styrene as a mixture for this polymerization, he would be infringing the Stober-Amos patent, and if that is so, it seems to me that the Stober-Amos patent anticipates the use of such process for the polymerization of styrene and rubber.

I haven't hitherto mentioned the Allen case. The Allen case, of course, discloses the prepolymerization in the stirred reactor up to 35 percent—prepolymerization, of course, of styrene up to 35 percent, and it talks about a turbulence through the mass. It is clear that the process, manipulative process, is the same as the one concerned in the patent in suit. But the question becomes whether the Allen process discloses the copolymerization of styrene and rubber, and that depends upon whether the use of the word "butadiene" in the patent that we talked about yesterday really means "polybutadiene." Well, it seems to me that in all probability it does. Certainly I think Dr. Boyer would recognize that, as is indicated in his monograph. I think it is Brand 2 and in Dow 157. His own chart does a little shorthand and refers to butadiene, certainly in circumstances that indicate he is not talking about gas. He is undoubtedly talking about polybutadiene.

And, as the testimony indicates, Mr. Olson would recognize that in all probability that in the context used the talk is about polybutadiene. At least the reference there, inartisic as it is, would create a suggestion to a knowledgeable chemist that they may very well be talking about polybutadiene.

But this comment was incidental, and it is not altogether clear, and thus I would not want to base a decision of novelty or lack of novelty altogether on the somewhat offhand and inarticulate comment contained in the Allen patent. And this is particularly so when, as Mr. Blair pointed out yesterday, when the British counterpart patent came along the text was changed.

So I consider the Allen case as a kind of a probable makeweight. I certainly would have great difficulty

hanging the whole concept of anticipation on the Allen patent. But I think it more likely than not that the Allen patent does disclose the copolymerization of polybutadiene and styrene. So as a makeweight I will include that, too.

So it is the conclusion of this court that the patent in suit is not novel because it was anticipated by Stober-Amos alone, bearing in mind the general, common nature of the materials concerned and, second, by Stober-Amos combined with Ostromislensky. Because there the actual formula is expressed. And to a lesser extent by the Allen patent.

Now, if I am wrong as to that then it seems to me ever more clear that the patent must fall because of obviousness. And I refer now, of course, to the Brand motion.

Much of what I have talked about already, if it applies to obviousness, if we get there, applies with equal pertinence to novelty. Once again, the purpose of the Stober-Amos process is to make crystal polystyrene prepolymerized in a stirred reactor. Once again, the reason why you stir is to prevent channeling and to accomplish heat transfer and uniform dispersion.

Now, we must consider whether in light of Stober-Amos the process taught in suit is obvious. And we will consider that, as both Dow and Brand have urged, by applying the tests reflected in the John Deere case [148 USPQ 459].

First we must consider the scope and content of the prior art. Well, I have already discussed that. The prior art covers the making of crystal polystyrene by stirring, and also covers the use of the polymerization of rubber and styrene.

We have to consider the differences between the prior art and the claims. Well, the difference between the claims and the specifically asserted prior art are alleged to be the adding of rubber.

As I say, the using of rubber was already known. And the shearing agitation aspect, the stirring. That, too, was already known, as reflected in the Stober-Amos patent.

Shearing agitation! I have heard of shearing agitation for about three years now, and I have listened every time with all the care I could muster to see what the differences are between shearing agitation and stirring or beating or agitating, and I can find no significant difference.

Dr. Amos said if I just put my little finger in the ocean and twist it around, I'm stirring. That may be one concept of stirring. But if he is doing that he is shearing agitating, too, because he is doing the same thing irrespective of the effect.

And I could visualize something shearing if it goes fast enough to really raise the dickens with the material that it is trying to shear. But that isn't what is done here. The so-called shearing agitation in the patent in suit even goes slower than in the Stober-Amos equipment, if I am not mistaken.

In any event, it is the same equipment going around at a moderate speed. Except for semantics I can find no difference whatever.

So let's turn to the ordinary level of skill in the pertinent art which John Deere [148 USPQ 459] enjoined us to do.

Well, once the Stober-Amos process was established for crystal polystyrene, that was part, of course, of the

pertinent art. Once that happened it seems to me that Dr. McCurdy quite promptly wrote that they were planning on using—trying to make impact polystyrene in the Stober-Amos equipment.

I think that is Brand 10. I put it in my earlier notes, but I couldn't find my copy of Brand 10 this morning. But I think that's where it is.

And, maybe, Dart 12 also. Anyway, there is an early reference by Dr. McCurdy.

> "We are going to see what we can do to make impact polystyrene or Styron 475 in the Stober-Amos equipment."

I think he referred by name to the Stober-Amos equipment.

Now, at that time the art was aware of the tendency of a combination of rubber and styrene to cross-link. That had been met before. They knew the effect of rubber on viscosity. They had been able to handle it before.

Even at Dow, Brand Exhibit 78 talks about that back in December 1942 on the second page where it talks about liquid rubber which we call Styron 140 made by the polymerization of styrene butadiene at 250 degrees Centigrade can be act—whatever, I guess it must be an English mistake. Thereby an addition from 1 to 10 percent sulfur chloride to a rubber-like mass which is still very flexible at 45 degrees Centigrade. By very slowing adding the sulfur chloride and at the same time stirring the liquid rubber a more uniform dispersion of the sulfur chloride can be made, and so on.

This isn't on all fours, but they knew of the problems created when you try to copolymerize rubber with styrene.

Knowing that they made tests on the viscosity of Q 475 partially polymerized. That's on Brand 42. Tests were made by Mr. Smeltzer and Dr. McIntire. And, as has been pointed out, they found that the viscosity of 475 was seven times higher, I suppose at a comparable degree of polymerization, than the crystal polystyrene.

So they determined to take safeguards, as the thing says. They beefed up the power of the stirrer and they determined to use care in watching the increase of the viscosity, not let it get up too high.

So after doing those things, natural things to be done, they tried it in the December test, the so-called unsuccessful test. What happened was that they lost temperature control. That's replete in the current or later documents. In fact, Brand 42 mentions that same thing. But they concluded immediately they could do it next time.

> "Yes. We had to stop here. But all we have to do is start at a lower temperature and maintain better control and we'll be able to do it."

And they did.

Now, I know that the fact that they did, and looking back upon it, does constitute Sunday morning quarterbacking. I promised Mr. Blair I would try never to do it. But I couldn't find anything in the conduct of anybody at Dow that would indicate an advanced real fear that the test was unwise or could not be successful.

Dr. Boyer now remembers that he was desperately afraid. By the time Dr. Boyer got off the stand, I have to discount as a bit of that same Sunday morning quarterbacking of which we all have a tendency, at

this point. His conduct currently did not indicate any such thing.

He was mindful of cross-linking, of course, and mindful of viscosity problems. He may well have been mindful of Dow 657. That is the article in India Rubber World. Although I would be amazed at the retentiveness and the breadth of the reading of Dr. Boyer if at that time in December of 1946 he could remember an article that came out two and a half years earlier, a rather insignificant comment in such article.

But maybe he did know it at that time. But all that that does is say that if carried out in bulk such a copolymerization of rubber and styrene leads to an insoluble and infusible gel which is very difficult to remove from the reaction vessel. It says if carried out in bulk.

All right. The farther you get it along, why, the more difficult the substance is, the more insoluble and infusible it becomes. That doesn't mean it becomes insoluble and infusible immediately. All it means is you have to use care.

So even if he was currently mindful of that, this doesn't add anything to the fact that all these scientists realized the need to use a reasonable amount of care in the use of rubber and polystyrene in this equipment.

It seems to me the most significant testimony on this phase comes from Mr. Smeltzer who, according to my notes—and I did not look up the textual reference, but I think my notes are pretty clear here—he said Dr. Amos and Mr. Stober expressed concern. They said to the effect that viscosity is going to be much higher, and they were concerned about the agitator being over-

loaded, and that with rubber there could be some cross-linking, and if it gets overheated, you might not be able to dissolve it, and thus the equipment might set up.

But they didn't express any other precautions than the normal ones that you would use in making crystal polystyrene. Other than that, to watch the controls and if the rise is too rapid, increase the speed, and level the unit off by getting the viscosity under control, and that viscosity is governed by temperature and retention time.

So all of these people had their eyes open. They knew the particular significance of including rubber. But no one expressed the idea that it could not be done and was not a logical thing to try.

Despite Dr. Boyer's present expressions of concern, as I say, his conduct at the time didn't indicate it. He didn't follow it up to see whether or not this horrendous undertaking, this potentially disastrous undertaking, was disastrous, and neither did Dr. Amos. It was just done in ordinary course.

And McCurdy and Kin knew it could be done because they had made these laboratory tests or at least—I don't say knew it could be done, but had mighty good idea that there was nothing extraordinary in this. And it worked. Strike the "it worked." That's Sunday morning quarterbacking.

But it seems to me that also we have been able to find nothing in the prior art that suggests that you can-

not stir in the early stages of polymerization, which is what the patent teaches. That's what Stober-Amos teaches. And it was—well, Stober-Amos, of course, doesn't teach anything about rubber in this respect. But it seems to me that the evidence does not contain significant indications that anybody reasonably concluded that you could not stir in the early stages of polymerization.

I am mindful of the German gentleman's testimony. But he said it would be foolish to try to polymerize in a stirred reactor, and I rather inferred from that he was talking about trying to do the whole thing. Nobody even ever suggested that early in—before this patent developed—that it would not be—that it would be other than dangerous to try to do the whole polymerization in a stirred reactor.

Well, so I am obliged to conclude that inasmuch as the Stober-Amos patent taught the copolymerization of styrene in a stirred reactor, prepolymerization in a stirred reactor, and that it was known to copolymerize rubber and styrene, as Ostromislensky indicates, that it was obvious in the light of the Stober-Amos patent to try to do the same thing with rubber, and it was done.

There are many other aspects of this case that could be discussed. I have not undertaken to counter all of the arguments that the plaintiffs have made. I will simply say that I just am not able to conclude that they overcome or even come close to overcoming the conclusions that I find myself obliged to take here.

Accordingly, the respective motions for judgment will be granted on both of the grounds that I have expressed.

Counsel for the defendants will collaborate on joint findings and judgment.

July 30, 1970

Since the conclusion of the trial, on April 2, 1970, I have received and considered the following documents:

1. Proposed Findings of Fact and Conclusions of Law submitted by Brand and Dart.

2. Brand's brief in support of its application for attorney's fees.

3. Dow's brief in opposition to the application for attorney's fees.

4. Dow's Counterfindings of Fact and Conclusions of Law.

5. Dow's memorandum in support of its Counterfindings.

6. Dart's memorandum regarding Counterfindings.

7. Brand's memorandum regarding Findings of Fact and Conclusions of Law.

8. Brand's reply brief in support of its application for attorney's fees.

The documents that accompanied some of the foregoing have been noted but not read entirely, inasmuch as the view that I now have of this case makes it appear quite unlikely that these materials will be found to be particularly pertinent or persuasive.

Upon reading the Findings of Fact proposed by Brand and Dart, I noted that they appeared correctly to set

forth the important Findings that I announced at the conclusion of the trial. They also seem to me to be otherwise generally correct, but I looked forward to receiving Dow's objections thereto and/or alternative proposals, in the expectation that they would point out any instances in which the Brand-Dart Findings were not supported by the record.

The Dow submission regarding Findings was found to be of little help. It is based upon hypotheses that are exactly contrary to the conclusions that I announced at the end of the trial and which I believe to have been impelled by the evidence. For example, contrary to Dow's proposed Findings, and without inviting further argument, I am prepared and intend to find among other things, that:

(a) Stirring and "shearing agitation" mean precisely the same thing, insofar as these terms are concerned in the relevant art.

(b) The so-called Stober-Amos equipment was used in the January 1948 operation substantially without change.

(c) The process of the patent in suit is the Stober-Amos process, with the addition of small amounts of rubber. This addition does not require significant changes either in the process or the equipment used to accomplish the process.

(d) The current statements of Dr. Amos to the contrary notwithstanding, the responsible people at Dow were not fearful or apprehensive in December 1946 that the adding of such rubber would be disastrous or even unsuccessful. They realized the need to take reasonable precautions to control viscosity.

(e) The December 1946 run of styrene-rubber was partially successful, the principal problem having been a loss of temperature control with a consequent rapid increase in viscosity.

(f) The process of the patent in suit does not prevent cross-linking (or even "appreciable" cross-linking).

(g) The patent in suit is invalid because of lack of novelty, and because of obviousness, for the reasons hereinabove stated and those stated by the court at the conclusion of the trial.

In light of all of the foregoing, it is my intention basically to use the Brand-Dart proposed Findings. If Dow would like to suggest corrections or additions that are warranted by the record, do not simply contain evidentiary matter that is inconsistent with my conclusions, and would be of significance on appeal, it is still welcome so to do. Such submission should be filed and served by August 24, 1970.

With respect to attorney's fees, I am strongly of the view that Dow is guilty either of intentional lack of candor or inexcusable neglect in failing to call the attention of the Patent Office to:

(a) The Allen patent.

(b) The Stober-Amos patent.

(c) The "German Plastics Practice" article.

(d) The fact that the patent in suit stemmed directly from, and was the same as, Dow's own Stober-Amos process, except for the addition of rubber.

Irrespective of any argument that might conceivably be made as to what distinctions the use of rubber in the copolymerizing process may make, I do not see how any reasonable person could conclude that the above

items are not important parts of the relevant prior art. Even before reading the Brand reply brief, I was singularly unimpressed by Dow's reliance upon "S. Levin". The Monroe case (332 F.2d 473, 141 USPQ 710 (9th Cir. 1964)) further confirms my initial view.

At the present time, I am tentatively of the belief that substantial attorney's fees to Brand and Dart are indicated. However, the parties have not yet had an opportunity to argue this matter orally, and I shall reserve ruling until the final hearing. In the meantime, Dart is requested to assert the amount of fees that it claims, and the justification therefor.

Pursuant to stipulation, the hearing for the settling of Findings and attorney's fees has been calendared for August 31, 1970, at 10:00 a.m. In order better to accommodate counsel, the hour is hereby changed to 2:00 p.m. on that date.

Sept. 1, 1970

The above-entitled causes having been consolidated for the purposes of trial, the party The Dow Chemical Company having assumed for the purposes of the trial the position of plaintiff and the parties Brand Plastics Company, Standard Oil Company (Indiana) and Amoco Chemicals Corporation in the one case and Dart Industries Inc. in the other having assumed for the purposes of trial the position of defendants, and said causes having come on regularly for trial, during which witnesses were heard and exhibits received in evidence and considered, the Court, being fully advised in the premises, makes the following Findings of Fact and Conclusions of Law, which shall be applicable to both of said causes, pursuant to the provisions of Rule 52 of the Federal Rules of Civil Procedure.

Findings of Fact

1. The Dow Chemical Company (hereinafter Dow) is a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, having a regular and established place of business and doing business within the County of Los Angeles, State of California.

2. Brand Plastics Company was a corporation organized and existing under and by virtue of the laws of the State of Delaware, upon the filing of the complaint was a subsidiary of Amoco Chemicals Corporation, remaining so until June 1, 1969 at which time it became part of Amoco Chemicals Corporation.

3. Standard Oil Company (Indiana) and Amoco Chemicals Corporation are corporations of the States of Indiana and Delaware respectively, each having its principal place of business in Chicago, Ill.

4. Dart Industries Inc., formerly named Rexall Drug and Chemical Company (hereinafter Dart), is a corporation duly organized and existing under the laws of the State of Delaware and it has its office and principal place of business at Los Angeles, California.

5. Actual controversy exists as between Dow on the one hand and Brand Plastics Company, Standard Oil Company (Indiana) and Amoco Chemicals Corporation on the other, respecting the validity and infringement of Letters Patent No. 2,694,692. Dow having asserted and the other parties having denied that said Letters Patent are valid and have been infringed by them.

6. Dow claims that Dart for a long time last past has been and that it still is infringing United States Letters Patent No. 2,694,692.

7. On November 16, 1954, United States Letters Patent No. 2,694,692 were granted to Dow for a "Method of Making Linear Interpolymers of Monovinyl Aromatic Compounds and a Natural or Synthetic Rubber" upon an application filed August 25, 1950 in the names of James L. Amos, John Lloyd McCurdy and Otis Ray McIntire (hereinafter the patent in suit).

8. Dow has asserted that the purported invention defined by the claims of the patent in suit was conceived on November 11, 1946 and no evidence was presented which would entitle the patent to an earlier date of invention.

9. Dow is the owner of the patent in suit and has owned the same since it was granted.

10. The patent in suit purports to disclose and claim a process for making the plastic, impact polystyrene, by polymerizing a solution of styrene and other monomers and a rubber of certain specified types present in certain specified proportions.

11. In the process of the patent in suit the purposes of stirring are, among others, to prevent channeling, to effect temperature equalization and to accomplish uniformity of chemical composition.

12. Styrene is a monomeric material which upon initiation by heat or a catalyst will chemically react or polymerize to form polystyrene.

13. The polymerization reaction by which monomers such as styrene are converted to polymers is exothermic and in any commercial process for making polystyrene some means must be provided to dissipate the heat thus generated.

14. The product obtained by the polymerization of styrene monomer is generally referred to as crystal

polystyrene and is characterized by being water white, readily moldable but, like glass, has a relatively low impact strength, i.e., moldings will break or fracture upon the application of relatively small loads.

15. The first commercial method of polymerization of styrene utilized by Dow was the so-called all can process which was adopted in the late 1930s and was used for about ten years.

16. In the all can process a metal can was filled with styrene, placed in a water bath and the styrene polymerized through a predetermined temperature cycle, programmed over a period of several days and finally heated in an oven to complete the polymerization.

17. The all can process was adopted because of ease of scale-up, low investment and simplicity.

18. The diameter of the can was such that the exothermic heat of reaction could be dissipated sufficiently rapidly to permit polymerization on a commercial scale.

19. The all can process, although used commercially, had several marked disadvantages, including high labor cost and nonuniformity of product due to poor temperature control.

20. Shortly after Dow commercially adopted the all can process, it sought to develop a process whereby styrene could be converted to polystyrene continuously.

21. Dow desired a continuous process because it was more efficient, more economical, gave greater flexibility and could be operated with better control of the polymerization.

22. In 1945 Dow attempted to use a continuous process employing a single stage reactor which in-

cluded a screw extruder, which reactor proved unsatisfactory since "channeling" was experienced, channeling being the more rapid flow of portions of less viscous feed stock through the reactor.

23. To avoid channeling Dow connected in series with the tubular reactor a prepolymerizer whereby the viscosity of the material introduced into the screw extruder could be increased.

24. A common solution to channeling prior to November 11, 1946 was to stir material in a reactor to mix the less viscous fluid with the more viscous fluid.

25. The prepolymerizer employed by Dow to increase the viscosity of the polymerizing mixture consisted of a stirred kettle.

26. This combination of prepolymerizer and screw extruder is the so-called Stober-Amos equipment and is described in the Stober-Amos patent No. 2,530,409 issued November 21, 1950 on an application filed May 27, 1948.

27. The Stober-Amos equipment was successfully used in the production of crystal polystyrene by September of 1946.

28. In addition to preventing channeling, stirring the polymerizing mass in the prepolymerizer of the Stober-Amos equipment as operated prior to November 11, 1946 effected temperature equalization and uniformity of chemical composition.

29. The Stober-Amos equipment was placed on stream in September, 1946 and used by Dow both experimentally and commercially in the production of various forms of polystyrene for several years.

30. Between September 1946 and January 1948 the Stober-Amos equipment was modified from time to

time in several particulars including, among others, changes in the feed system for adding polymerizable material to the prepolymerizer, the provision of a packing gland and sight glasses, modifications in the discharge from the prepolymerizer, the addition of a positive pump and a continuous reading recording viscosimeter, and a modification of the drive system for the stirrer.

31. None of the modifications made to the Stober-Amos equipment between September 1946 and January 1948 materially changed the mode of operation of that equipment.

32. The exothermic nature of styrene polymerization and the superiority of a continuous process were well known to those skilled in the art to which the patent in suit pertains prior to November 11, 1946.

33. The Collings patent teaches that styrene polymerization is strongly exothermic; that the viscous, partially polymerized mass is a very poor heat conductor; that the heat generated tends to remain stored within the mass whereby non-uniform polymer products are obtained; and that such difficulty can be overcome by the use of a stirred kettle to control the heat of reaction.

34. The Allen patent teaches that agitation is essential in polymerizing styrene because of the low heat conductivity of the mass and the exothermic nature of the reaction; that agitation in the initial polymerization is essential if uniformity is to be maintained; and that it is desirable to agitate to obtain a substantial turbulence throughout the entire mass so that no material portions will be left in a quiescent condition.

35. Prior to November 11, 1946, Dow investigated several methods of increasing the impact strength of

polystyrene and had produced a so-called impact polystyrene wherein styrene monomer with approximately 5% of an unsaturated rubber added thereto was polymerized using the all can process.

36. The expression "impact polystyrene" is commonly applied to a styrene polymer which has been modified by the addition of rubber either before or after the styrene is polymerized.

37. In 1927 Ostrosmislensky, in his patent No. 1,613,673, taught that the impact strength of polystyrene could be increased by dissolving rubber in styrene monomer and polymerizing the resulting solution.

38. The rubbers contemplated by the patent in suit are unsaturated, i.e., they contain a plurality of residual double bonds and are thus capable of reacting with the polymerizing styrene upon polymerization of the styrene-rubber system.

39. It was well known to those skilled in the art to which the patent in suit pertains prior to November 11, 1946, that when styrene monomer is polymerized in the presence of a compound containing a plurality of double bonds, the resulting product will contain a quantity of cross-linked product, such being taught in 1936 by Staudinger in an article entitled "The Insoluble Polystyrene", Transactions of the Faraday Society, Vol. 32, pp. 323-332.

40. The Staudinger article teaches that when styrene is polymerized in the presence of varying quantities of divinylbenzene, which contains a plurality of double bonds, the divinylbenzene molecules act as bridges, linking together the thread-like molecules of polystyrene to form macro-molecules extending in three dimensions.

41. Compounds such as divinylbenzene, butadiene, polybutadiene and GRS rubber contain a plurality of double bonds and are therefore cross-linking agents for styrene.

42. Divinylbenzene is at least one hundred times more efficient as a cross-linking agent for styrene than is GRS rubber.

43. It was known to those skilled in the art to which the patent in suit pertains prior to November 11, 1946, that styrene with a cross-linking agent present could be polymerized in a stirred kettle until at least 40% of the styrene monomer had been polymerized and such knowledge is disclosed in the Allen Patent No. 2,496,653 and in the article "Preparation of Cross-linked Polystyrenes" by Hopff, et al., appearing in the publication MODERN PLASTICS of July 1946.

44. The said Allen patent states that the polymerization process which included the step of agitation is applicable to the preparation of copolymers of styrene with other plastics such as butadiene, which statement would make obvious to one skilled in the art to which the patent in suit pertains that the Allen process could be used in polymerizing styrene in combination with polybutadiene rubber.

45. The said MODERN PLASTICS Hopff article teaches that styrene in combination with divinylbenzene can be polymerized to 40% polystyrene in a stirred kettle and that the stirring of such a system is advantageous in controlling the temperature of polymerization and molecular size.

46. Dow knew as early as 1942 that stirring a cross-linking system improved the uniformity of the resulting product.

47. Impact polystyrene made by Dow prior to November 11, 1946 using the all can process was known by Dow to be non-uniform both as to molecular weight of the resulting polymer and as to distribution of the rubber within the billet so formed.

48. Prior to November 11, 1946 Dow had made impact polystyrene using one or more of the rubbers described in the patent in suit and within the percentages of rubber specified in that patent.

49. On or about November 11, 1946 it was proposed that a small amount of rubber be added to the styrene being fed into the prepolymerizer of the Stober-Amos equipment to make impact polystyrene.

50. Prior to November 11, 1946, polymer chemists at Dow were familiar with the operation of the Stober-Amos equipment and the operating and process conditions used therein for making crystal polystyrene, knew that the impact strength of polystyrene could be increased by polymerizing solutions of styrene with a small amount of rubber dissolved therein, knew of the tendency of the combination of rubber and styrene to cross-link, knew that the presence of a small amount of rubber in styrene increased the viscosity of the polymerizing mixture, knew that the purpose of agitation in the Stober-Amos prepolymerizer was to prevent channeling, effect temperature equalization and accomplish uniformity of chemical composition, and knew that stirring a cross-linking system improved the uniformity of the resulting product.

51. Between November 11, 1946 and December 23, 1946 one or more of the inventors carried out experimental partial polymerizations of styrene-rubber systems to determine the viscosity at various stages of

polymerization and by doing so determined that using approximately 5% GRS rubber, the viscosity of the partially polymerized styrene-rubber system at comparable degrees of polymerization was about seven times that of partially polymerized styrene.

52. Giving due regard to the increase in viscosity and the effect thereof on the equipment, before attempting the proposal described in Finding 49 one or more of the patentees took those safeguards one skilled in the art would naturally take, including increasing the power available to the stirrer in the prepolymerizer and the provision of means to carefully observe the increase of viscosity.

53. On December 23, 1946, Dow first added a little bit of rubber to the Stober-Amos prepolymerizer; before this run was commenced the unit had been operated continuously for 649 hours and had produced 22,500 pounds of crystal polystyrene; without changing any of the conditions under which such polystyrene had been polymerized, Dow, on December 23, 1946, started adding a mixture of 95% styrene monomer and 5% GRS rubber to the prepolymerizer; during the course of this run control of the temperature within the prepolymerizer was lost; as a result addition of the styrene-rubber solution was discontinued; on the morning of December 24, 1946 Dow commenced to add to the prepolymerizer plain styrene monomer and by the afternoon of December 24 full control of the Stober-Amos equipment had been obtained.

54. This December 1946 run of a styrene-rubber solution in the Stober-Amos equipment was only partially successful because loss of temperature control caused the viscosity in the prepolymerizer to rise too high; however, one or more of the patentees concluded

on the basis of this run that the Stober-Amos equipment could be successfully used to make impact polystyrene if the polymerization was started at a lower temperature and better control of temperature and viscosity was maintained.

55. In about January 1948 Dow, for the second time, used the Stober-Amos equipment to make impact polystyrene, adding to the prepolymerizer thereof first, plain polystyrene, then adding styrene with 1% GRS rubber dissolved therein, then styrene with 3% GRS dissolved therein and finally styrene with 5% GRS rubber dissolved therein; the purpose of varying the amount of GRS rubber was to control viscosity.

56. In the run referred to in Finding 55, the temperature conditions in the prepolymerizer were carefully controlled, the temperature being decreased as increasing amounts of rubber were added; no difficulties were encountered in this use of the Stober-Amos equipment and impact polystyrene was successfully produced.

57. None of the changes made to the Stober-Amos equipment between December 1946 and January 1948 was shown to account for the success of the January 1948 run as distinguished from the partial success of the December 1946 run.

58. Between December 1946 and December 1947 the Stober-Amos equipment was used commercially by Dow to produce polystyrene, which polystyrene was sold by it in the normal course of business.

59. Prior to the December 1946 run, Otis Ray McIntire advised one of his superiors, Raymond F. Boyer, that the Stober-Amos equipment was going to be used to make impact polystyrene, at which time Dr. Boyer was mindful of the cross-linking and viscosity

problems associated with styrene-rubber systems; and his conduct at the time of the December 1946 run did not indicate any undue concern and any instructions he may have given Mr. McIntire relative thereto were limited to a request that Mr. McIntire be cautious; any testimony of Dr. Boyer to the contrary is not worthy of belief.

60. No creditable evidence was introduced at the trial from which there could be found anything in the conduct of any of the Dow personnel that would indicate, in advance of the December 1946 run, a real fear that the run was unwise or could not be successful. On the contrary, the evidence presented established that no one expressed the idea that the run could not be made and was not a logical thing to try. James L. Amos and Kenneth E. Stober, co-inventors of the Stober-Amos process, expressed concern to Richard C. Smeltzer, the operator of the Stober-Amos equipment, in December of 1946 at the time the same was to be used to polymerize impact polystyrene, advising Mr. Smeltzer that the viscosity was going to be high, that they were concerned about the agitator being overloaded and that with rubber there could be some cross-linking; however, they did not suggest any other precautions than the ones normally used in making crystal polystyrene, i.e., the controls should be watched and if the viscosity rise were too rapid, the mixture input should be increased and the temperature in the prepolymerizer dropped since viscosity is governed by temperature and retention time.

61. It would have been obvious prior to November 11, 1946 to a person skilled in the art to which the patent in suit pertains, that were the Stober-Amos equipment to be used to make impact polystyrene, stirring

in the prepolymerizer would be necessary, and also in the absence of stirring in the prepolymerizer, the result would be a failure.

62. To the extent that the testimony of Professor Bruno Vollmert might indicate that a polymer chemist in 1946 would be concerned about the use of a stirred reactor to polymerize a solution of styrene and rubber, that testimony must be interpreted to mean that concern would be felt only if the styrene-rubber system were polymerized to substantially 100% polymerization and cannot be construed to mean that in 1946 one would be concerned about the use of the Stober-Amos prepolymerizer to polymerize styrene with 5% rubber dissolved therein to 40% conversion.*

64. Prior to January 6, 1949, when the Stober-Amos equipment had been operated to make impact polystyrene, the styrene-rubber solution was added to the stirred prepolymerizer, polymerized to about 35% by weight polymer, withdrawn from the prepolymerizer and fed continuously into the screw extruder wherein polymerization was substantially completed.

65. Between January 6, 1949 and February 28, 1949, Dow personnel removed a portion of partially polymerized styrene-rubber solution from the stirred prepolymerizer of the Stober-Amos equipment and finished that polymerization quiescently in cans, using a variation of the time-temperature cycle conventionally used in the all can process.

66. This method of polymerization, i.e., partially polymerizing in a stirred kettle and then finishing quiescently in cans, had previously been used by Dow as

*Editor's Note: Finding 63 was deleted by the court.

early as 1939 and was described in the prior art Allen Patent No. 2,496,653.

67. Upon examination of impact polystyrene made by the process of partially polymerizing the styrene-rubber solution in a stirred kettle and finishing quiescently, Dow determined that a more uniform extrusion could be obtained as compared to extrusions made from impact produced by the all can process.

68. On September 19, 1949 the patentees of the patent in suit executed a disclosure of invention to the Dow patent department in which the patentees stated that their invention was the preparation of styrene-GRS rubber copolymers by agitated polymerization.

69. Upon receipt of such disclosure of invention, the Dow patent department made a search of the prior art and before August 25, 1950 it had found a series of patents relating to polystyrene, including the patent to Allen No. 2,496,653.

70. By September 1945, Dow was aware of the process by which Badische Anilin Und Soda Fabrik had been making polystyrene and that such process was described in the publication "Technical Report on the Manufacture of Thermoplastics In Plants Of I. G. Farben-industrie, A. G., Germany", dated September 1945 and in the publication German Plastics Practice dated 1946; the process therein described included the steps of prepolymerizing styrene to about 30% polystyrene in a stirred kettle and then finishing polymerization in a heated vertical tower; by at least October 26, 1949 the Dow patent committee was acquainted with the publication German Plastics Practice and of the details of the polystyrene process described therein.

71. On or about October 26, 1949 the Dow patent committee reviewed the disclosure of invention exe-

cuted by the patentees of the patent in suit and approved the same for application work.

72. At the time of such approval, the Dow patent committee had little conviction as to patentability of the process of the patent in suit, noting that the prior art, including the German Plastics Practice publication, was very close and that arguments as to patentability were none too strong.

73. At the time the application which became the patent in suit was filed. Dow's employees, including one or more of the patentees, knew that it was known prior to November 11, 1946 by others skilled in the art to which the patent in suit pertains that:

(a) because of the exothermic nature of styrene polymerization, some form of temperature control was necessary and the more uniform the temperature, the more uniform the resulting product, as taught by the Allen Patent No. 2,496,653.

(b) in polymerizing styrene systems a continuous process was desirable, both economically and to achieve better product quality control, as taught by the Allen Patent No. 2,496,653 and as was known from the practice of the Stober-Amos process.

(c) agitating a polymerizing styrene system prevented channeling in continuous processes, effected temperature equalization and accomplished uniformity of chemical composition, as was taught by the Allen Patent No. 2,496,653, the publication GERMAN PLASTICS PRACTICE and as was known from the practice of the Stober-Amos process.

(d) styrene and a cross-linking agent could be successfully partially polymerized in a stirred kettle, as was taught by the Allen Patent No. 2,496,653.

(c) the impact strength of polystyrene could be increased by the addition of a small quantity of rubber, as was taught by the Ostromislensky Patent No. 1,613,673.

74. At the time the application which became the patent in suit was filed, Dow knew that in the process of making impact polystyrene wherein a solution of styrene and rubber was partially polymerized in a stirred kettle and polymerization was completed either with or without stirring that:

(a) such process consisted of nothing more than the addition of a small amount of rubber to the previously known Stober-Amos process.

(b) in such process, because of the exothermic nature of styrene polymerization, some form of temperature control was necessary and the more uniform the temperature, the more uniform the resulting product.

(c) agitating a polymerizing styrene-rubber system prevented channeling, effected temperature equalization and accomplished uniformity of chemical composition.

(d) impact polystyrene made by such process contained a significant amount of cross-linked material and the agitation contemplated by the patent in suit did not and could not prevent cross-linking.

75. At no time, either upon the filing of the application which became the patent in suit or during the prosecution thereof, did Dow, its agents or representa-

tives, call to the attention of the Patent Office either that prior art identified in Finding 73(a) through (d), or Dow's knowledge of the details of such process as particularized in Finding 74.

76. The alleged invention of the patent in suit is defined by six claims of which claim 1 is typical, that claim defining:

> A method for making a substantially linear interpolymer of a monovinyl aromatic compound and a rubber, which method comprises polymerizing a homogeneous liquid mixture of copolymerizable mono-olefinic compounds containing as the sole polymerizable components at least 63.75 per cent by weight of a monomeric polymerizable monovinyl aromatic compound selected from the group consisting of monovinyl aromatic hydrocarbons and nuclear halogenated derivatives thereof, not more than 21.25 per cent of a monomeric vinylidene compound which is a member of the group consisting of acrylonitrile, methyl isopropenyl ketone and monoalkenyl aromatic hydrocarbons of the benzene series and nuclear chlorinated derivatives thereof, and from 1 to 15 per cent by weight of an unvulcanized rubber which is soluble in monomeric styrene and is selected from the group consisting of natural rubber, synthetic GR-S type rubber containing in chemically combined form from 50 to 80 per cent by weight of butadiene and from 20 to 50 per cent of styrene, synthetic Buna N type rubber containing in chemically combined form from 75 to 85 per cent by weight of butadiene and from 15 to 25 per cent of acrylonitrile, a copolymer containing in chemically combined form 50 per cent by

> weight of butadiene and 50 per cent of methyl isopropenyl ketone, and polybutadiene rubber, the said mixture being substantially free from insoluble gels, by heating the liquid mixture of copolymerizable components at a polymerization temperature between 60° and 200° C. such that the reacting mass is kept in a flowable condition as the monomer is progressively polymerized while at the same time subjecting the reacting mass to a shearing agitation sufficient to prevent appreciable cross-linking of the polymer being formed with resultant formation of a linear interpolymer until at least 10 per cent by weight of the monomeric polymerizable starting materials have been polymerized.

Insofar as the same is pertinent to these proceedings, eliminating unnecessary verbiage, this claim defines a process wherein styrene with a small amount of an unsaturated rubber dissolved therein is heated so as to polymerize the mixture while at the same time subjecting the polymerizing mixture, at least during the early stages of the reaction, to "shearing agitation" to prevent "appreciable cross-linking".

77. In the specification, the patent in suit taught that the process is carried out by polymerizing the starting materials while agitating the polymerizable solution by application of a shearing action throughout its mass and heating of the same to polymerization temperatures between 60° and 150°C., preferably a temperature of from 70° to 90°C., until a solution containing from 10 to 40 per cent by weight of polymer is obtained; thereafter, the polymerization is usually continued at temperatures of from 90° to 200°C., with or

without agitating the polymerizing mass until all or nearly all of the remaining monomer is polymerized.

78. The specification of the patent in suit made specific reference to two pieces of apparatus which might be used to practice the patented method. The larger of these was a jacketed prepolymerizer vessel six feet high having an internal diameter of three feet and equipped with a tubular agitator having a hollow shaft. The agitator comprised a bank of vertical steel tubes having a diameter of one inch. The tubes were disposed on a horizontal plane at a distance of 2.75 inches between centers. The ends of the tubes were connected to headers attached to the hollow shaft to form a slotted tubular paddle type agitator having overall dimensions corresponding to a rectangle 2.5 feet wide by 4.5 feet high. The shaft of the agitator was provided with a suitable inlet and outlet for passage of heating or cooling liquid through the tubular paddle, as required. The agitator was rotated, or was capable of being rotated, at a rate of 28 revolutions per minute. This prepolymerizer vessel in the stated particulars is identical to the one forming a part of the Stober-Amos equipment and described in the Stober-Amos patent as referred to in, for example Findings 26, 28 and 30. The smaller of the two items of equipment referred to in the specification was a two liter glass reactor flask equipped with a gas inlet, a reflux condenser and a stirrer. The stirrer comprised a rectangular plate having the dimensions 0.75 inch by 3 inches and was hinged in the slotted end of a one-half inch diameter steel shaft so that it could be inserted and removed through the neck of the flask. The plate formed a paddle type agitator 3 inches wide by 0.75 inch high. The stirrer was rotated at 50 revolutions

per minute in some examples and 180 revolutions per minute in other examples.

79. In two of the examples of the patent in suit polymerization is completed in a screw extruder having a heated barrel sixteen feet long with an internal diameter of ten inches. The barrel of the extruder was jacketed in four equal sections through each of which cooling liquid could be processed as required. A compression type screw was provided and adapted for moving the polymerizing solution through an extrusion die or orifice. This screw polymerizer in the stated particulars is identical to the one forming a part of the Stober-Amos equipment and described in the Stober-Amos patent as referred to in, for example, Findings 26, 28 and 30.

80. Prior to November 11, 1946 there was no novelty in the substitution of a styrene-rubber solution for styrene in the art of polymerization. Iwan Ostrosmislensky, on January 11, 1927, in his patent 1,613,673 disclosed a "Process for Manufacturing Plastic Compositions and Products Obtained Thereby." In his specification, Ostrosmislensky taught that rubber may be dissolved in substantially pure styrene and polymerized by methods already known for producing polystyrene.

81. The use of the Stober-Amos machine and process for polymerizing a styrene-rubber solution rather than styrene was merely analogous or cognate to the use theretofore made of the machine and process by Stober-Amos.

82. If one were to use the Stober-Amos machine and process and were to use a rubber-styrene solution as the starting material for the polymerization, he would infringe the patent in suit.

83. The process and the use of the machine which Stober and Amos designed, made and used prior to November 11, 1946 anticipates the alleged invention of the process which the patentees assertedly conceived on or about November 11, 1946 and later patented in the patent in suit.

84. Even if it were a fact that the invention of the patent in suit were not identically disclosed or described in the prior art to which reference has been made, the differences between the subject matter as a whole and the prior art would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

85. Instead of apprising the Patent Office of the true scope of the prior art and the true nature of the process sought to be patented, Dow asserted that the process sought to be patented included the step of "shearing agitation" and that such "agitation * * * is not conventional", whereas the evidence established that there is no difference between "shearing agitation" and the conventional stirring, beating or agitating.

86. Dow further misled the Patent Office by representing to it that as a result of the agitation described in its application "the tendency of the styrene and rubber to copolymerize and form cross-linked, or highly branched chain molecules could be substantially reduced, or entirely prevented", whereas the evidence established that the agitation contemplated by the patent in suit is not sufficient to prevent molecular cross-linking and that there is an appreciable amount of cross-linked material in the final product.

87. The representations referred to in Findings 85 and 86 were false and were known by Dow and one

or more of the inventors to be false at the time they were made.

88. In 1950, if a polymer chemist of ordinary skill had been told that the stirring contemplated by the patent in suit prevented cross-linking, he would have been of the opinion either that some inexplicable or mysterious matter was occurring or he would have doubted the truth of the statement.

89. The agitation contemplated by the patent in suit is the same as that taught by the Allen Patent No. 2,496,653.

90. The prior art before the Patent Office examiner during the prosecution of the application which became the patent in suit consisted of the patents to Ostrosmislensky No. 1,613,673; Roedel No. 2,356,091; Morley No. 2,382,498; Rogers No. 2,406,403; LeFevre No. 2,460,300; Morley No. 2,576,134 and British Patent No. 593,072.

91. Insofar as the same are pertinent to these proceedings, the prior art considered by the Patent Office taught that:

(a) the impact strength of polystyrene could be increased by incorporating a small amount of rubber therein (Ostrosmislensky Patent No. 1,613,673 and Morley Patent Nos. 2,382,498 and 2,576,134).

(b) Homogeneous mixture of styrene and polystyrene could be obtained by subjecting the polymerizing system to mechanical kneading (Rogers Patent No. 2,406,403).

(c) an insoluble polystyrene system could be obtained by polymerizing styrene with rubber and divinylbenzene (British Patent No. 593,072).

92. The prior art known to Dow but withheld by Dow from the Patent Office is markedly more pertinent than that considered by the Patent Office prior to granting the patent in suit.

93. The level of ordinary skill in the art to which the patent in suit pertains is that of a well educated chemist having particular expertise in the chemistry of polymers and having substantial equipment and funds at his disposal.

94. The Stober-Amos process used by Dow to make crystal polystyrene prior to November 11, 1946 and the process described in the patent in suit for making impact polystyrene are substantially the same as to temperatures, times, agitation and constituents.

95. The process described in the patent in suit was described in the Allen Patent No. 2,496,653.

96. It would have been obvious to one skilled in the art to which the patent in suit pertains on or prior to November 11, 1946 to use the earlier Stober-Amos crystal polystyrene process to make impact polystyrene.

97. In view of the teachings of the Allen Patent No. 2,496,653, it would have been obvious to one skilled in the art to which the patent in suit pertains to partially polymerize a solution of styrene and an unsaturated rubber to at least 10% conversion and then to complete the polymerization with or without further agitation.

98. In view of the teachings of the Hopff article in Modern Plastics entitled "Preparation of Cross-linked Polystyrenes", it would have been obvious to one skilled in the art to which the patent in suit pertains to partially polymerize a solution of styrene and an unsaturated rubber to at least 10% conversion and

then to complete the polymerization with or without further agitation.

99. In view of the state of the art as it existed prior to November 11, 1946, it would have been obvious to one skilled in the art to which the patent in suit pertains to make impact polystyrene by partially polymerizing a solution of styrene and an unsaturated rubber to at least 10% conversion with agitation and then completing the polymerization with or without further agitation.

100. Had Dow called to the attention of the Patent Office the prior art of which it had knowledge, Letters Patent No. 2,694,692 would not properly have issued.

101. If Dow had disclosed to the Patent Office the facts of which it had knowledge relative to the nature of the process sought to be covered by the application which became the patent in suit, Letters Patent No. 2,694,692 would not properly have issued.

102. Dow's failure to call to the attention of the Patent Office the prior art of which it had knowledge, its failure to deal candidly with the Patent Office respecting the nature of the process sought to be patented and its prosecution of the present action with knowledge of these facts, makes this case exceptional within the meaning of Section 285 of Title 35, United States Code.

103. In view of the circumstances of this cause, it would be unjust for the prevailing parties to be left to bear the burden of their own counsel fees.

104. Brand Plastics Company, Standard Oil Company (Indiana) and Amoco Chemicals Corporation have incurred attorney's fees in the amount of $593,730.75

in defending themselves against the charges of infringement of the patent in suit.

105. Dart has incurred attorney's fees in the amount of $342,698.61 in defending itself against the charges of infringement of the patent in suit.

106. The Findings of Fact made herein are predicated at least in part on this Court's observation of the witnesses presented by Dow, their demeanor on direct and cross-examination, their candor or lack thereof in responding to questions, and this Court's belief as to the truth or falsity of the testimony given.

Conclusions of Law

1. This Court has jurisdiction of the subject matter of the cause of action in Civil Action No. 65-1725-WPG by virtue of the provisions of Sections 1338(a) and 2201 of Title 28, United States Code.

2. This Court has jurisdiction of the subject matter of the cause of action in Civil Action No. 66-412-WPG by virtue of the provisions of Section 1338(a) of Title 28, United States Code.

3. United States Letters Patent No. 2,694,692, issued November 16, 1954, and each of the claims thereof are invalid and void.

4. The subject matter claimed in Letters Patent No. 2,694,692 was known and used by others in this country and was described in a printed publication before the conception thereof by the patentees and the claims of such patent are therefore invalid under the provision of Sections 101 and 102 of Title 35, United States Code.

5. United States Letters Patent No. 2,694,692 and each of the claims thereof are invalid and void

under the provisions of Section 103 of Title 35, United States Code, in that the differences between the subject matter sought to be claimed and the prior art would have been obvious at the time the purported invention was made to a person having ordinary skill in the art to which the subject matter of the patent pertains.*

7. The presumption of validity which ordinarily attaches to a patent is destroyed or largely dissipated by the failure of the Patent Office to consider the prior art most pertinent to United States Letters Patent No. 2,694,692 before granting such patent.

8. Dow's failure to call to the attention of the Patent Office the prior art of which it had knowledge, its failure to deal candidly with the Patent Office respecting the nature of the process sought to be patented and its prosecution of the present action with knowledge of these facts, makes this case exceptional within the meaning of Section 285 of Title 35, United States Code.

9. Dow's breach of its duty of candor prevented the Patent Office from properly performing its function and the prevailing parties in invalidating the patent in suit have performed a valuable public service.

10. In view of the circumstances of this cause, it would be grossly unjust for the prevailing parties to be left to bear the burden of their own counsel fees.

11. Plaintiffs in Civil Action No. 65-1725-WPG are entitled to a judgment declaring that Letters Patent No. 2,694,692 and each of the claims thereof are invalid and void.

12. The counterclaim filed by The Dow Chemical Company in Civil Action No. 65-1725-WPG and the

*Editor's Note: Conclusion 6 was deleted by the court.

complaint filed by The Dow Chemical Company in Civil Action No. 66-412-WPG and all of the claims for relief purported to be stated therein and in all amendments thereof should be dismissed.

13. Brand Plastics Company, Standard Oil Company (Indiana), Amoco Chemicals Corporation and Dart Industries, Inc. are entitled to recover from The Dow Chemical Company their costs incurred herein.

14. Brand Plastics Company, Standard Oil Company (Indiana), Amoco Chemicals Corporation and Dart Industries, Inc. are entitled to recover from the Dow Chemical Company their reasonable attorney's fees.

Dec. 2, 1970

Since the hearing on August 31, 1970, I have given consideration to the following documents:

1. Brand's brief in support of application for attorney's fees filed June 1, 1970.

2. Dow's brief in opposition to application for attorney's fees by Brand and Dart, filed July 6, 1970.

3. Brand's reply brief in support of application for attorney's fees, filed July 27, 1970.

4. Mr. Hoppe's affidavit regarding attorney's fees, filed August 18, 1970.

5. Mr. Smoot's affidavit regarding attorneys' fees, filed August 31, 1970.

6. Mr. Smoot's supplemental affidavit regarding attorneys' fees, filed September 22, 1970.

7. Dow's brief in opposition to the awarding of attorney's fees, filed October 6, 1970.

8. Brand's brief regarding attorney's fees, filed October 19, 1970.

9. Dart's brief in support of the awarding of attorneys' fees, and the affidavit of Mr. Valles in support thereof, filed October 20, 1970.

10. Dow's reply brief regarding attorneys' fees, filed October 29, 1970.

At the conclusion of the trial, on April 2, 1970, I was fully mindful that each of the parties had incurred very substantial legal expenses in connection with this long, complicated and vigorously fought litigation. As is disclosed by the transcript (page 3194), my tentative inclination was to let each party bear its own share of these expenses, rather than to impose the entire burden upon Dow. However, further reflection has impelled a different conclusion, as is revealed in findings of fact 100 to 103 and conclusions of law 8 to 10 and 14. This conclusion has been reinforced by a consideration of the hereinabove listed documents submitted by the parties.

This case is "exceptional", within the meaning of 35 U.S.C. § 285, not because hindsight reveals that there was prior art that Dow inadvertently or with understandable negligence failed to call to the attention of the Patent Office. Dow's patent personnel were well aware that the "process" concerned in its application consisted simply of adding a little rubber to the mixture being subjected to polymerization in the so-called Stober-Amos equipment that was also the subject of one of Dow's currently pending applications. The inherent relevance of the Stober-Amos disclosure cannot reasonably be questioned, and Dow's failure even to mention it constitutes a gross lack of candor. If such disclosure had been made, I am convinced that no reasonable patent official would have approved the subject patent application. This conclusion becomes even more com-

pelling in light of other prior art, such as the Allen patent No. 2,496,653 and the Modern Plastics article, of which Dow was also aware and failed to disclose.

Brand asserts that this case is also "exceptional" in that Dow invented the term "shearing agitation" to conceal the fact that its process involves no more than conventional stirring. Dow's response, as I understand it, is to refer to the distinction between *process* and *result*. Dow appears now to deny that it ever contended that the *process* of "shearing agitation" is different from conventional stirring; it insists that its position has been only that the *result* is different when such shearing agitation (or stirring) is applied in the subject process, which involves the use of rubber. I am unable to conclude that Dow had this subtle distinction in mind when it was seeking a patent or in the course of the trial of this action. Its conduct was quite to the contrary. For example, the Stober-Amos application referred to its equipment as containing a "special non-agitating sweep" (Brand Exhibit 3, column 3, line 26); the same equipment, performing in the same manner, is described in the application here concerned as administering "shearing agitation". These two descriptions are mutually inconsistent with respect to what the equipment does; they do not refer simply to a difference in result.

Dow's present rationale does not square with the testimony of its principal witness at the trial, Dr. Amos. He sought at length to contend that the equipment used in the first reduction to practice of the subject patent was significantly different from the Stober-Amos equipment in construction and in operation.

The application for the patent here concerned states that "* * * the [shearing] agitation required in appli-

cants' process is not conventional, and is not that employed in usual mixing or kneading process." (Brand Exhibit 44, page 60). Dow now insists that these quoted words when placed in the context of the preceding paragraph, refer to a result rather than a manipulative process. This conclusion is by no means impelled, even in such context. If the claimed difference was only in the result, the applicants could have said so very simply. There was no need or occasion to invent the term "shearing agitation" except for the purpose of concealing the fact that what was meant was no more than stirring or the subjecting of the mixture to the Stober-Amos equipment.

The record in this case impels the conclusion that, both before the Patent Office and at this trial, Dow carefully sought to convey the impression that the *process* of "shearing agitation" connoted something much more and much different than simple stirring. I agree with Brand that such attempt was unjustified, was intentionally misleading, and constitutes a further reason why this case is "exceptional".

Brand charges further that this case is "exceptional" because the subject patent was granted in light of one of Dow's principal claims being that its "shearing agitation" could "* * * prevent appreciable cross-linking of the polymer being formed * * *." (Claim 1 of the subject patent at column 10, lines 73-74).

Dow's witnesses at the trial acknowledged that "shearing agitation" (or stirring) does not prevent molecular cross-linking. It was clear from such testimony that the well-recognized purposes of stirring in the process of polymerization are to control temperature, obtain a more uniform dispersion, and prevent channeling.

One of Dow's principal witnesses agreed further that cross-linking is caused principally by temperature.

Dow now insists that it has never contended that "shearing agitation" prevents molecular cross-linking, but that it has claimed only that such agitation is sufficient to prevent visible fish eyes and to make the product soluble. This is consistent with the position that Dow's witnesses took at the trial, wherein they made distinctions between "good" cross-linking and "bad" cross-linking, or between physical cross-linking and chemical cross-linking. However, in its dealings with the Patent Office, Dow was not nearly so self-restrictive in its claims. The file wrapper (Brand Exhibit 44, page 44) shows that Dow represented that its shearing agitation substantially reduced or entirely prevented "* * * the tendency of the styrene and rubber to copolymerize and form cross-linked, or highly branched chain molecules * * *." Just how such a claimed attribute differs from preventing molecular cross-linking, which Dow now says it does not claim, is far too subtle for me to understand. Here again, if Dow intended to represent to the Patent Office only that its "shearing agitation" accomplished the physical reduction in size of the cross-linked particles, it would have been easy enough to say so. It is equally obvious that no patent would have resulted.

The Court of Appeals, in Purer & Company v. Aktiebolaget Addo, 410 F.2d 871, 880, 161 USPQ 270, 275 (9th Cir. 1969), ruled that:

> "In patent cases, attorneys' fees should be awarded only in extraordinary cases. The exercise of discretion in favor of an allowance of attorneys' fees should be based upon a finding of

> unfairness or bad faith in the conduct of the losing party, or some other equitable consideration of equal force, which makes it grossly unjust that the prevailing party be left to bear the burden of his own counsel fees."

Such a finding is impelled here by the circumstances discussed in this memorandum, and attorneys' fees will be awarded to Brand and Dart accordingly.

Brand has asserted and documented a claim that it spent $604,016.75 for legal services and $95,869.47 in disbursements, for a total of $699,886.22, in the course of this litigation between its inception in December 1965 and until May 1970. Dart shows expenditures of $292,164.83 for attorney's fees and $50,533.78 for disbursements, a total of $342,698.61 from August 1965. Dart acknowledges, however, that an estimated $10,000.00 of this sum is allocable to the duplication of services made necessary by substitution of attorneys, thus reducing Dart's total claim to $332,698.61.

Bearing in mind the duration, extent and complexity of this litigation, this court concludes that the above-mentioned attorneys' fees and disbursements were reasonably incurred in this litigation. This conclusion is reaffirmed when Dow's reported expenditures for fees covering one aspect of the case are compared with those claimed by Dart. (See Dow's brief filed October 6, 1970, pages 26-27).

Dow urges that attorneys' fees allocable to several aspects of the litigation should be deducted from the

sums requested by Brand and Dart. I am unable to agree:

1. Dart's motion for summary judgment on the ground of "public use" was, indeed, time consuming and expensive, and the motion was denied. However, it was brought in good faith and there was considerable basis for Dart's contention. The prosecution of the motion constituted a reasonable attempt to shorten the litigation.

2. Brand unsuccessfully moved for summary judgment on the ground that Dow's own documentation belied its claim in the patent that its process could prevent appreciable cross-linking. This motion was impressively urged, and summary judgment was denied only because of Dow's insistence that the evidence at the trial would justify its claim. In light of the present record, it appears that the motion should have been granted.

3. Brand's expenditures in temporary pursuit of the defense of laches was reasonable, and the efforts apparently were discontinued when investigation showed the defense to be untenable.

4. Dart's expenses in investigating the matter of its alleged infringement at a time when litigation was threatened by Dow but not yet filed, were reasonable, and these expenses resulted appropriately from the granting of the patent in suit.

5. Although the defense of noninfringement was not litigated, due to the determination of patent in-

validity at the conclusion of Dow's case, both Brand and Dart were obliged to prepare themselves for trial on the matter of infringement. The expenses of doing so are properly chargeable against Dow.

Brand is entitled to recover from Dow attorneys' fees and disbursements in the sum of $699,886.22; Dart is entitled to recover from Dow attorneys' fees and costs in the sum of $332,698.61. A judgment containing such awards is being filed contemporaneously herewith.

This memorandum shall constitute a supplement to the findings of fact and conclusions of law filed on September 1, 1970.

APPENDIX E.

Final Judgment.

United States District Court, Central District of California.

Brand Plastics Company, et al., Plaintiffs, v. The Dow Chemical Company, Defendant. Civil No. 65-1725-WPG.

The Dow Chemical Company, Plaintiff, v. Dart Industries, Inc., Defendant. Civil No. 66-412-WPG.

Filed: Dec. 2, 1970.

Entered: Dec. 3, 1970.

The above-entitled causes were consolidated for the purposes of trial, and trial was had before this court. Findings of fact and conclusions of law were made by the court and filed on September 1, 1970. On the same date a judgment based thereon was signed and entered. On September 3, 1970, this court caused to be entered an order vacating the judgment pending resolution of the matter of attorneys' fees. Such matter has now been determined, as is disclosed in a memorandum to counsel filed contemporaneously herewith. Accordingly, the court hereby announces this judgment in which

IT IS HEREBY ORDERED, ADJUDGED AND DECREED THAT:

1. This court has jurisdiction of the subject matter raised by the respective pleadings herein and of the parties to the respective actions.

2. United States Letters Patent No. 2,694,692 and each of the claims thereof are invalid and void.

3. The counterclaim filed by The Dow Chemical Company in Civil Action 65-1725-WPG and the com-

plaint filed by The Dow Chemical Company in Civil Action 66-412-WPG and all the claims for relief purported to be stated therein and in all amendments thereto are hereby dismissed with prejudice.

4. Brand Plastics Company, Standard Oil Company (Indiana) and Amoco Chemicals Corporation are entitled to an award of attorney's fees, pursuant to the provisions of Section 285 of Title 35, United States Code, in the amount of $604,016.75, and reimbursement for disbursements in the sum of $95,869.47, or a total of $699,886.22.

5. Dart Industries, Inc. is entitled to an award of attorney's fees, pursuant to the provisions of Section 285 of Title 35, United States Code, in the amount of $282,164.83, and reimbursement for disbursements in the sum of $50,533.78, or a total of $332,698.61.

6. Brand Plastics Company, Standard Oil Company (Indiana) and Amoco Chemicals Corporation are entitled to recover from The Dow Chemical Company their costs in an amount equal to $ .....

7. Dart Industries, Inc. is entitled to recover from The Dow Chemical Company their costs in an amount equal to $ .....

DATED: December 2, 1970.

William P. Gray
United States District Judge